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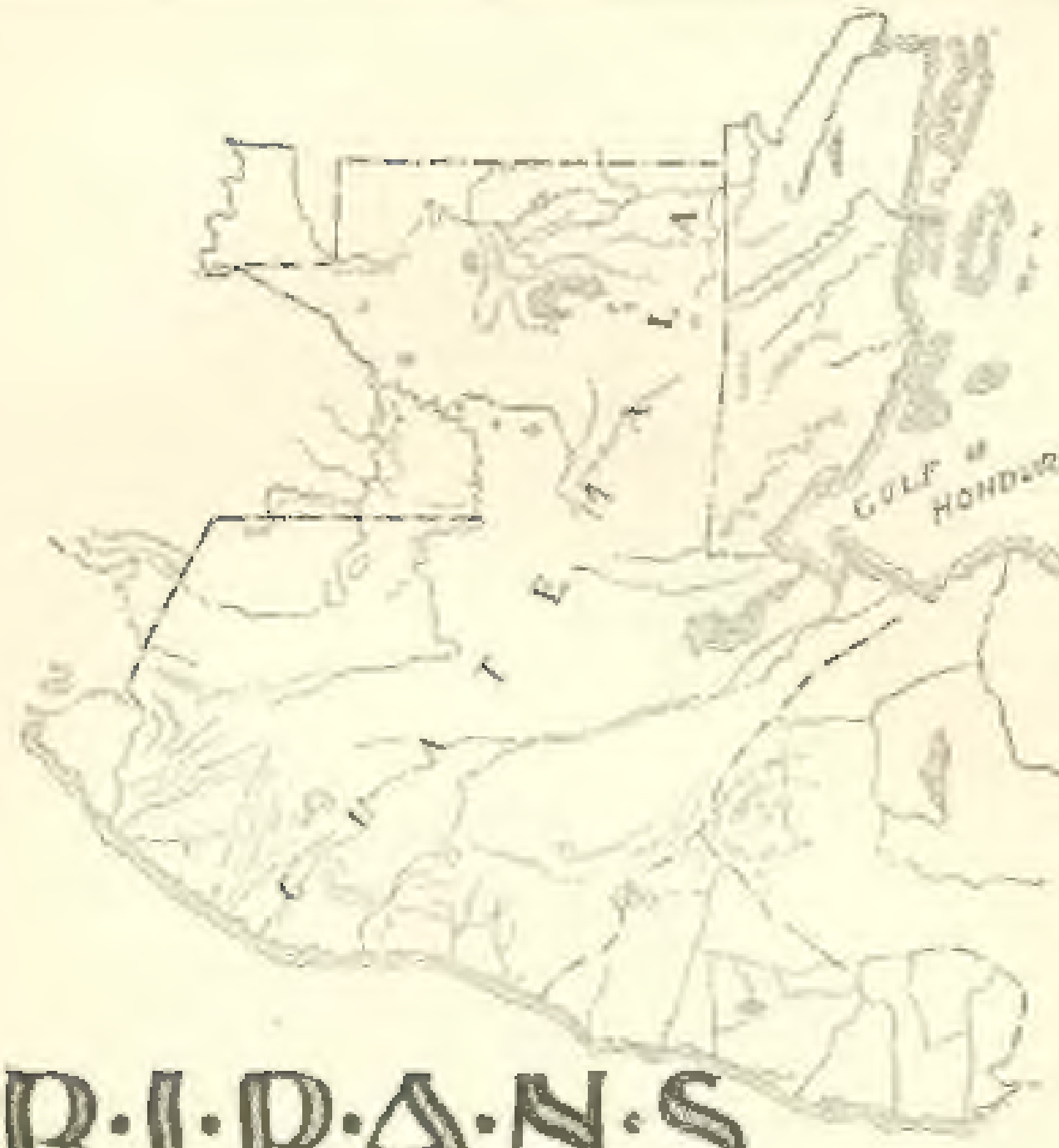

THE

NATIONAL GEOGRAPHIC MAGAZINE

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THE SAMOAN ISLANDS

BY EDWIN V. MORGAN

Secretary of the Samoan Commission

The arrangements for the division of the Samoan Islands concluded last between the governments of Great Britain, Germany, and the United States may be considered as resulting from the [illegible] [illegible] these [illegible] islands, which for twenty-five years have been [illegible] of the three protecting powers. Whether our European partners are satisfied with their share of the division, their geographic and economic [illegible] are [illegible] to say. The [illegible] of a [illegible] which [illegible] of [illegible] in Africa and the South Pacific [illegible] years [illegible]. However the [illegible] may be, the United States has [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Pago Pago [illegible] [illegible] the [illegible].

Samoa, or, as they were formerly called by geographers, the Navigators Islands, from the skill in navigation shown by the natives, consists of four principal islands, situated in the South Pacific between 168° and 173° west longitude and 13° and 15° south latitude, nearly midway between New Zealand and Hawaii. The number of islands in the group may [illegible] [illegible] be increased to 13 or even 14 [illegible]. Savaii, Upolu, Tutuila, and Manua [illegible] under the general term Samoa, with Manono and Apolima, are inhabited. All are volcanic [illegible], [illegible] [illegible] [illegible] rise as [illegible] immense green [illegible], the [illegible] representing the crown being mountainous [illegible] is covered with cocoanut palms, breadfruit, [illegible] and other tropical trees, which [illegible]

[illegible]

land except at those places where fresh water streams, forcing their way through, form openings in the coral barrier. Between reef and

[illegible]

a little less than 1,000 miles, and its gross area in round numbers is 5??,8?? acres, a territory larger than the state of Rhode Island by 5?? and smaller than Delaware by 750 square miles.

The attention of the people of the United States was first drawn to the islands in the year 1871, when E. Wakeman prepared a report on them after an examination which he had made at the [illegible] W. H. Webb, then considering the establishment of a [illegible] from San Francisco to Sydney via Hawaii and Samoa, over the route since traversed by the Oceanic Company. Apia, on Upolu, was then, as it still is, the only settlement of size. Mr Wakeman foretold, however, with possibly too great optimism, that on the land on the shores of Pago-Pago Bay, a town would arise which might have a great commercial future. The only protection to Apia harbor is a reef, awash at low tide, which even in calm weather does not prevent a swell from entering that causes vessels at anchor to roll, and often prevents steamers from coaling in weather. During the hurricane season, from January to April, the men-of-war in port keep steam up, ready to put to sea when a storm threatens, as H. M. S. *Calliope* succeeded in doing in the hurricane of 1889.

At Pago-Pago there is a double harbor, shaped somewhat like a fish-

[illegible]

with an anchorage of 30 fathoms, while the inner, extending in total more than a mile, with a breadth of from 1,100 to 3,000 feet, can

[illegible]

score of steamers. Its mouth is protected by a pair of promontories

[illegible]

dense is their growth that when seen from any high point the ground appears completely hidden by a dense mass of foliage, from

[illegible]
side of the island, across the mountains and ten miles away, is
[illegible]
supply the natives with their favorite articles of American manufacture—cotton goods, kerosene, and tinned salmon. There was not
[illegible]
high chief.

It was with the father of the present bearer of that name that Commander (afterward Admiral) Richard W. Meade, U.S.N., made the compact which brought Tutuila in touch with the United States
[illegible]
Pago-Pago a naval station for the use and convenience of the vessels of the United States Government," and contained a promise that
[illegible]
between Mauga and three other chiefs of Tutuila, by which they bound themselves to form a league and model rules for their mutual welfare and protection, and to unite their several districts under a
[illegible]
to the fact that it was not to the interest of any one chief to keep it, and partly because there was no central power of sufficient strength to enforce the compact that the convention was not faithfully kept. Meade, foreseeing that this would be the case, recommended that the
[illegible]
Senate, and for that purpose it was sent by President Grant to the Senate, where it remained [illegible] until 1878, when certain [illegible] treaties were [illegible].

It is commonly and incorrectly believed that by this treaty land was acquired. All the rights granted, however, were the concession of
[illegible]
any jurisdiction would be put adverse to these rights."
[illegible]
interests in the group, and were anxious to enjoy privileges equal to

[illegible]

of the people by a system of rigid etiquette. No one may hold up [illegible]

[illegible] are uncovered in his presence. He [illegible]

[illegible] of words from those used for ordinary men. To address him requires a special branch of knowledge, and one who visits a high chief does well to make sure of the competence of his interpreter. Hedged about as he is, the chief in his intercourse with persons not of his rank has come to depend largely on his "talking-man," whose [illegible] the chief [illegible] certain families in which the office is hereditary. As a rule, one is elected who has a gift for oratory, which [illegible] in Samoa. Some talking-men are elected for the large provinces and [illegible] of which each province is made up, [illegible] their duties and powers are considerable. They are men of [illegible] of carriage, and as they stand leaning upon a staff of office with a "fue," or fly-flapper, cast over one shoulder, with which to emphasize or complete their remarks, they compare favorably in appearance with the orators of [illegible] than themselves. In addition to speaking in the name of the chief, it is their duty to distribute [illegible]

[illegible] and to [illegible]. During the late war party feeling was keenly aroused [illegible] the cause of Mataafa much strengthened by the desertion of [illegible], the principal Tulafale of [illegible], to Mataafa's side.

[illegible] of the kingdom grant titles, called Aopa, or Ao, [illegible]

[illegible] by the whole body or by a majority, and may even be bestowed by one qualified person. Inferior titles are often [illegible]

[illegible] hereditary and elective — that is to say, if the bearer of a title thinks proper when dying to bequeath it to his son, or, as is more common, to his sister's son, his wishes will probably be respected.

There are [illegible] or perhaps five great titles which stand out above the [illegible] whose [illegible]

position of Tupu, or king. Curiously enough, the name of Malietoa is not one of them. It means "well done, brave warriors," and was given to a hero who distinguished himself in the Tongan wars. Its importance lies in the fact that it carries with it, as a gift, the third and fourth of the titles just referred to. The claim of the present Malietoa Tanu to be king was that his father Malietoa Laupepa bequeathed to him the title of Malietoa, which gave him two titles. Then some of the talking men of Aana and Atua conferred on him the other two. Further, Tamasese, who claimed that he had an independent right to one title, resigned his right in favor of Tanu. [illegible] Malietoa received two of the titles [illegible] of Atua [illegible] of Aana [illegible] from the talking men of these provinces [illegible] at Mulinuu [illegible] of that name. Thus, according to Samoan custom, both candidates for the kingship may have possessed the necessary qualifications for it, and the matter may have been settled only by fighting it out or by the resignation of one of the candidates. It is clear from Samoan tradition that in early times there was no king, in the sense of the head of a central government. The four or five great titles which raised one above the others were but occasionally united in the same person, and then only to fall apart [illegible] those who took them away. It was only the missionaries, wishing to support some fixed government and a single leader [illegible] who helped to develop the idea of kingship. In history [illegible] the island [illegible] Malietoa [illegible] whom [illegible] was [illegible] the town of Apia and [illegible] the [illegible] forward [illegible]. As has already been observed, [illegible] the Samoan [illegible] by a strange confusion [illegible] both hereditary and elective. The king must have the four or five titles conferred on him, and he must [illegible] belong to one of the two families [illegible] name Malietoa [illegible]. Here again [illegible] Malietoa is a family name as well as a title. Any [illegible] of the family may call himself Malietoa [illegible] Malietoa [illegible] the right to be so called not by [illegible] by election, and [illegible] Tamasese are members of the [illegible] family.*

The white population, like the native, may be separated into classes [illegible] of Samoa and the president [illegible] of the [illegible] of Apia, [illegible] an American and the other a German, [illegible] of the three powers that were party to

* [illegible]

THE MANILA OBSERVATORY

By the Father José Algué, S. J.

Director of the Manila Observatory

The Manila Observatory began its work as a meteorological center in the year 1865, under the direction of the Jesuit fathers, who were employed as teachers in their college in the walled city, generally known as the Ateneo Municipal. Soon they commenced observations on their own account, their prime object being the study of typhoons. The following September one of these typhoons did great damage to the city and harbor of Manila, which caused the Jesuits to become more interested than ever in the discovery of the laws of the typhoons, so frequently destructive of life and property in these regions. The first Jesuit who acted as di[illegible] observatory was the Rev. Father Faura, and the first o[illegible] observatory was, of course, to discover if possible, some way of forecasting any typhoons dangerous to Manila, and to announce them in such time as to avoid disaster the track the storm would probably follow.

Father Faura was assisted in his task by two other Jesuits. [illegible]

[illegible] these slender means they began a series of observations which were diligently recorded from September, 1865, until the end of 1868. A paper containing these records was sent monthly to the principal [illegible]

[illegible] instruments, all of them corrected and compared with the standard instruments of the French Observatory of Montsouris. As with this new set of instruments observations could be recorded on a larger scale, [illegible]

[illegible] meteorological phenomena of each month.

Seven years later, when the city of Manila and the Philippine Islands in general were beginning to appreciate the [illegible] observatory, a subscription amounting to 7,142 Mexican dollars was raised for the purpose of enlarging the observatory and of allowing [illegible]

[illegible] ambition of the Jesuit fathers, and more particularly Father Faura, to carry out their ambition to make the Manila Observatory, if not the very best, one of the best in the Far East. For this purpose, Father Faura visited the principal observatories of Europe. At Rome he held conferences with the famous Italian astronomer, Father Secchi, and in England, at Stonyhurst Observatory, he acquainted himself with the method of installing a complete magnetic observatory. From there he proceeded to Paris, where he collected all possible information regarding meteorology, magnetism, and seismology.

On his return to Manila, Father Faura brought new interest to the work of the observatory. Perceiving that there was some connection between barometric oscillations and the proximity of a cyclone, he investigated the relation, and soon [illegible] to predict. Thus to Father Faura belongs the honor of being the first in the Far East to predict the existence and to determine the probable path of these storms. The first typhoon warning was published July 7, 1879, stating that a storm was crossing the northern part of Luzon. Later advices confirmed the prediction. The typhoon had really crossed the island and devastated the northern provinces of Isabela and Cagayan. On November [illegible] of that year the observatory announced the approach of another typhoon and considered its course as dangerous to the city of Manila. The forecast caused grave excitement throughout the city, but especially in the naval department. The captain of the port, [illegible], immediately ordered communication with the ships in the bay and suspended all traffic. The governor-general of the islands came in person to the observatory to ascertain the truth of the prediction. The answer was that a typhoon threatened the city and that it was imperative to prepare for emergencies. [illegible] had been effectively taken in accordance with the instructions of Father Faura. The typhoon came, and, owing exclusively to the warnings of Father Faura, the [illegible]

[illegible] lack of telegraphic communication the havoc was terrible. Forty-two shipwrecks, with great loss of life, were recorded.

The forewarning of this typhoon brought such honor to the observatory of Manila that its storm warnings have ever since been carefully heeded throughout the Philippine Archipelago. In the year 1880 telegraphic communication by cable was established between [illegible] to a really very useful typhoon warnings of Manila. In the same year the announcements of various typhoons were sent from Manila to Hongkong, where their importance was fully appreciated and favorably commented upon in the papers of that colony, especially in the *Hongkong Daily Press*. Soon afterward the [illegible] informed of the great value of these storm warnings, established at Hongkong a government observatory, the principal object of which is to give timely notice whenever any typhoon threatens [illegible].

Various typhoons occurred during the succeeding years and the warnings of the observatory concerning nearly every one of them proved to be correct. A new exception was [illegible] with more and better instruments than it already possessed. From the subscription [illegible] Mexican dollars very fine instruments were obtained, among which a barometer of Negretti. When the news reached the [illegible] of Hongkong [illegible] Commerce, and by him given to the observatory, where it was [illegible] valuable instruments for meteorological observation. Thus it is apparent that the appreciation of the Manila Observatory was as great in Hongkong as it was in Manila. Several [illegible] of these newspapers [illegible] especially those of the *Hongkong Daily Press*, dated [illegible] and 12, spoke in very high terms of the work accomplished at Manila. The same paper stated that in the course of the year 1882 [illegible] typhoons were announced to Hongkong from Manila, and that every one of these warnings proved correct.

We cannot enter into the description of these storms; a very interesting study of them was made by Father Faura, whose work [illegible] has been [illegible]. The same father published soon afterward another paper on the characteristic signs of an approaching typhoon, entitled *Señales Precursoras de Temporal* [illegible]. It is well known throughout the islands and is one of the most useful and popular [illegible] ever published.

In March, 1886, the observatory was transferred from the walled [illegible]

[illegible] coast.

With the removal a new era dawned upon the work of the ob- [illegible]

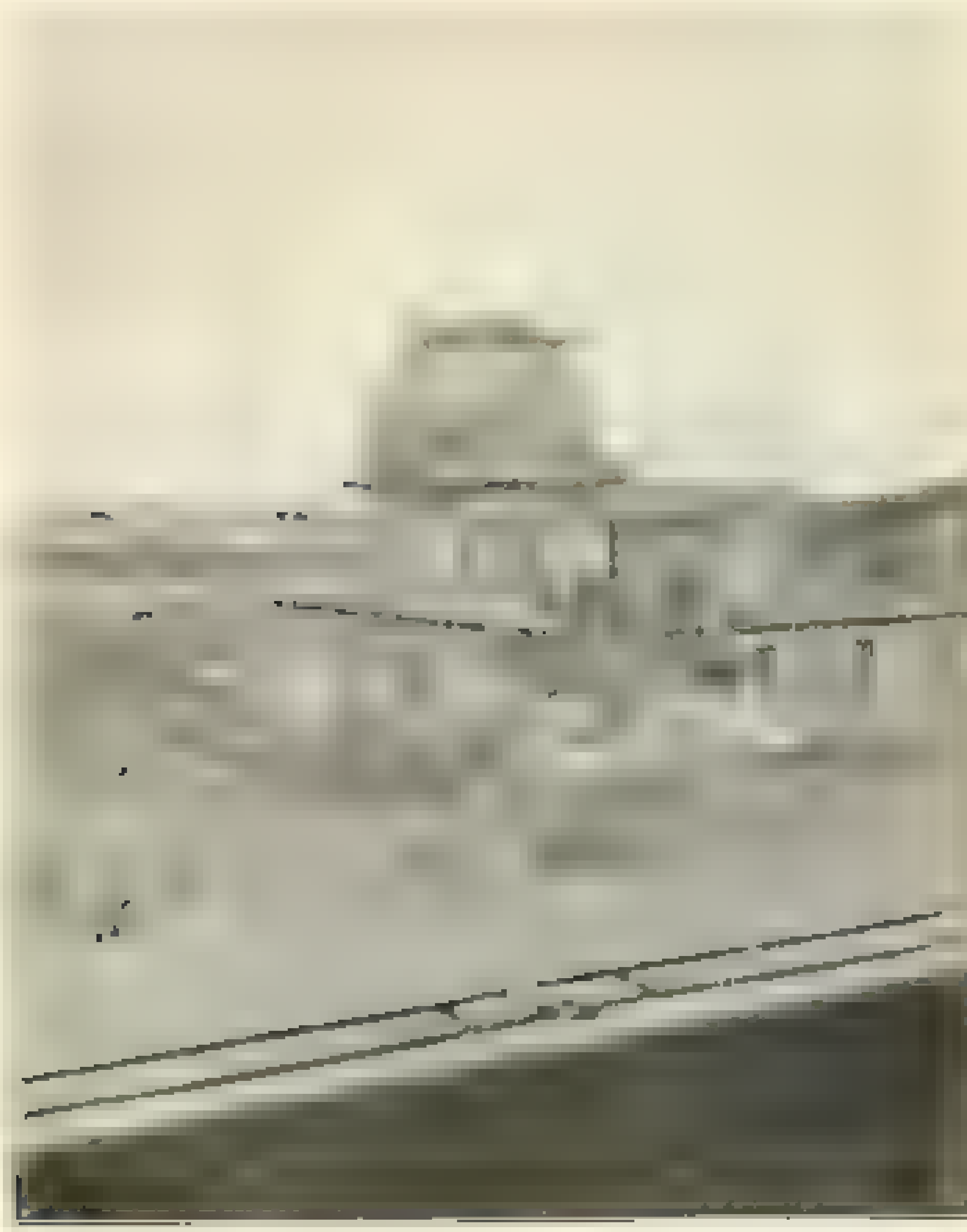
[illegible] in the recently published [illegible] in the second work on [illegible] Earthquakes of the Philippines," by Rev. Father Saderra Masó [illegible] observatory in different parts of the islands [illegible] of minor and even occasional danger. The most interesting of these [illegible]

[illegible] of 1893.

The director of the Manila Observatory, Father Miguel Saderra [illegible]

[illegible] to Spain. Another official invitation was sent to the director of the

by the present director (See "The Reflecting Zenith T[illegible] [illegible] Jackson [illegible], Washington, D. C., 18[illegible]). For the [illegible] of photographic plates the observatory possesses two



first-class micrometers, one made by Saegmuller, of Wash[illegible] the other by the optician [illegible]. The micrometric screw of the lat[illegible] [illegible] seven [illegible] long, [illegible] of the largest yet constru[illegible]

In general, the average number of these storm warnings sent abroad is three for each typhoon. The first is given when the first signs of [illegible] crossing the islands or is at the least distance from them (and thus not only the existence of the typhoon is announced, but also the direction of the storm, if necessary; and the third and final warning when the center of the typhoon passes out of the archipelago and enters the China Sea or recurves toward the Pacific Ocean. The number of these [illegible] as follows: In 1894, [illegible]; 1895, [illegible]; 1896, [illegible] and 1897, [illegible], making a total of [illegible].

These telegraphic warnings have been much appreciated in the [illegible] officer of the British navy, after the cutting of the cable between Hongkong and Manila, requested Admiral Dewey to permit the continu[illegible] of the interruption of the telegraphic storm warnings. The United States consul at Hongkong also testified to their great value, and [illegible] of Manila, to the Spanish consul in that colony [illegible] reading of the barometers of ships visiting the port.

THE LIMITED WATER SUPPLY OF THE ARID REGION

By Frederick H. Newell,

Chief Hydrographer, U. S. Geological Survey

A few years ago the old ideas as to the utter worthlessness for agri- [illegible] the most extravagant notions concerning its possibilities under irrigation. It was commonly heard that every acre could be reclaimed, and a man who ventured to assert that the water supply would suffice for the reclamation of only a small part of the land was accused of [illegible] danger of being [illegible].

Now, however, there is no longer talk of irrigating every acre, even of the most fertile soils, and the statement that only 3 or 10 per cent

land by a forgotten race. The more intelligent of the early ex- [illegible]

peoples had succeeded. It was not, however, until the systematic surveys of Major J. W. Powell were undertaken that the importance of the subject was fully realized. His first accurate report on the subject, entitled "Lands of the Arid Region," was printed in 1878, and the public then began to realize the possibilities latent in some of the arid region. This report, printed in several editions, has formed the basis of many popular articles and discussions, and its recommendations, at first treated with neglect, and even [illegible] have [illegible]

Curiously enough, the time has passed to carry out the comprehensive plans outlined toward the reclamation of the West, and doubt has arisen which [illegible] it imprudent [illegible] able to undertake any of the more elaborate and important projects.

For years after the publication of this report Congress [illegible] granted authority for the systematic examination of the arid lands [illegible]

mapping of the catchment basins and the detailed surveys of reservoir sites and canal lines. The appropriation was not passed until October 2, 1888, and it at once it became necessary to [illegible] work energetically in order to show results before the end of the fiscal year. The result was that the survey [illegible] ensued, and the work which [illegible] have been a [illegible] became a [illegible]

When the work was first begun it was commonly believed that localities suitable for the storage of water could be found almost anywhere in the mountains. This is still a common belief among people who have not given particular attention to the subject. Almost everywhere in the West the people are able to point out some locality or basin where they consider that a reservoir should be built. Careful examination, however, and a survey with instruments of precision, [illegible] show that the slopes are too great and the capacity too small for a dam to be built to even moderate height. To hold any considerable volume of water, structures of enormous size must usually be erected [illegible]

[illegible] constructed.

The number of places where conditions are favorable is limited. Sometimes a basin or site may be found of good capacity and where [illegible]

HURRICANES ON THE COAST OF TEXAS

By Lieutenant A. W. Cooley, U. S. Army

[illegible]

[illegible] extent of the calamity which had befallen the town. [illegible] from the scene and of those remaining a large part were [illegible] utter [illegible] with them—some but a few yards, others several lengths.

Numerous lakelets [illegible] occupying the places where prominent sand ridges stood 24 hours previous. Five of these extended clear across the town, and now join the lake in rear of the town. Seven others on the seaward [illegible] and extended their [illegible] parts.

Leaving Indianola much impressed by the immense damage wrought, and a few days later passing through Galveston, I mentioned to Mr E. O. [illegible] MacInerney, for years city clerk, the probability of Galveston suffering a similar fate in later years. Mr MacInerney had served for years as an observer-sergeant of the Signal Corps at Galveston, and was alive to the observations I then made. He informed me that steps were being taken to strengthen the ocean beach so as to [illegible] the action of the sea. Whether such protective measures were continued or not I do not know, but it is evident that Galveston's late experience and the fate of Indianola, which was practically wiped out, emphasize the gravity of the situation. The best engineering talent in the country should apply itself to the prompt solution of the problem of protecting the lives of thousands of valuable lives and [illegible] of property from the assaults of the sea, whose wildest commotions threaten the stability of the western Gulf coast.

[illegible]

The fact that the wild animals of the world are in danger of extermination is being forcibly brought home to the minds of all who are interested in natural history. This is mainly the result of the ruthless persistence with which game of every kind is hunted and at [illegible] and ivory. These, however, are assisted to a marked degree by [illegible] valuable animals and wantonly slaughter the fish and birds.

Notwithstanding this, Africa is still rich in animals, birds, and fishes, and by placing certain restrictions upon their destruction [illegible]

[illegible]

would then be able to gun or fish with reasonable success without endangering the future supply of game.

[illegible]

[illegible] animals, birds, and fishes of Africa, which convention, after being ratified by the powers, is to remain in force for fifteen years. By [illegible]

in Africa, through their extensive colonial possessions, have formed [illegible]

[illegible] the most extensive game preserve in the world.

The area over which the provisions of the convention are to apply [illegible] that portion of the dark continent extending from the twentieth parallel of north latitude to the southern line [illegible] to the Indian Ocean and the Red Sea. Under the terms of the con[illegible]

[illegible]

the young of certain animals, including the elephant, the rhinoceros, hippopotamus, zebra, [illegible] gazelle, ibex, and chevrotain are protected [illegible] when accompanied by their young. Particular emphasis is laid on the protection of young elephants, and all elephants' tusks weighing less than twenty pounds are to be con[illegible]

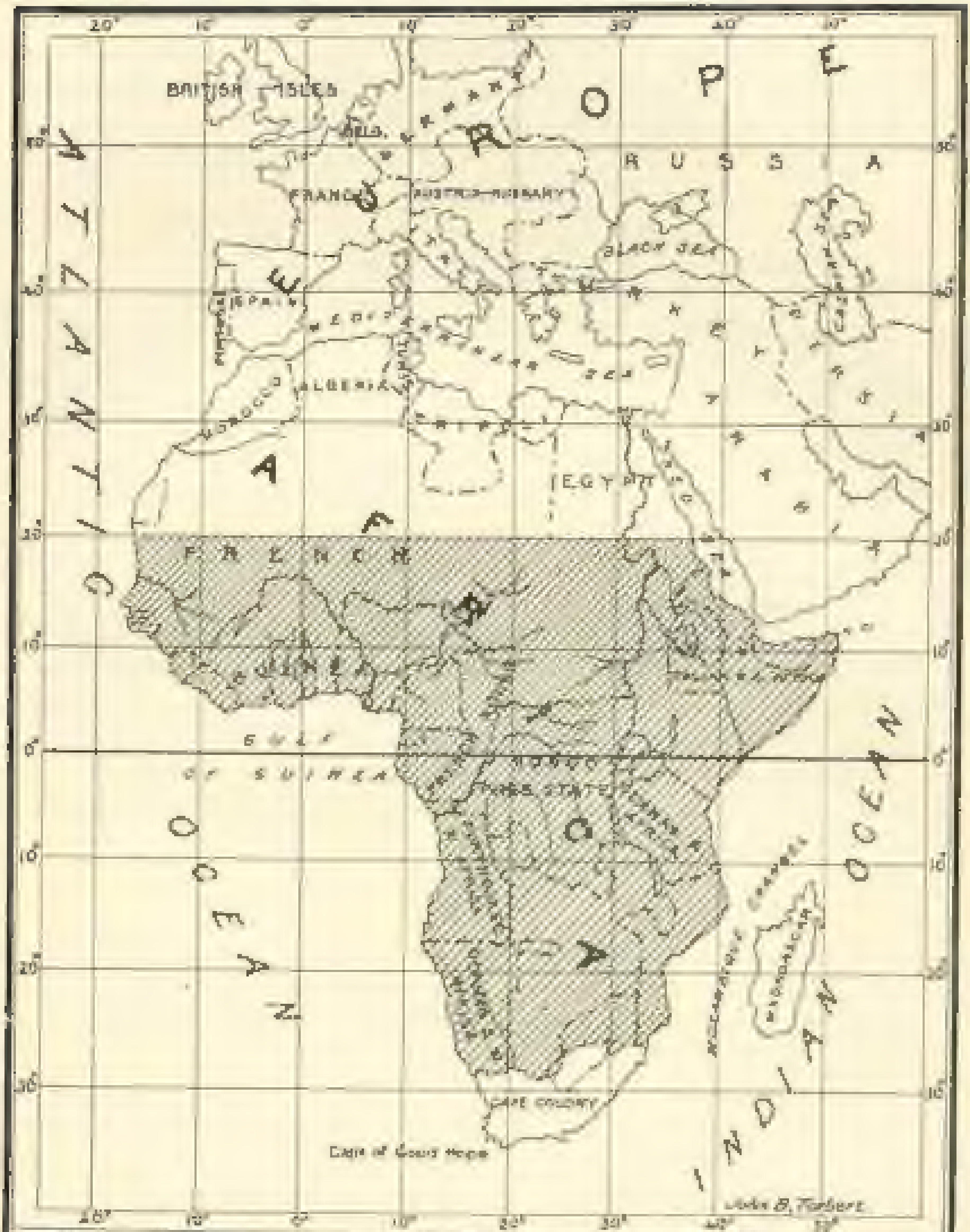
[illegible]

tion went into effect. The eggs of the ostrich, among those of a large number of other birds, are to be protected, but those of the crocodile and of poisonous snakes and pythons are to be destroyed. A limited number of lions, leopards, hyenas, otters, baboons and other animals [illegible]

[illegible] pythons may be killed.

The method of taking or killing game is regulated, to the extent [illegible]

[illegible]



MAP OF AFRICA, SHOWING TERRITORY WITHIN WHICH THE CONVENTION OF MAY 19, 1900, PLACES RESTRICTIONS ON THE KILLING OF WILD ANIMALS.

animals within the protective zone, and these are revocable where the provisions of the convention are in any way violated.

Another provision of the convention is that the contracting parties shall, as far as possible in their respective territories, encourage the domestication of zebras, elephants, and ostriches.

JOHN B. TOWNSEND.

ANNOUNCEMENTS

The Board of Managers of the National Geographic Society begs to announce to the resident members that about 200 responses to circular letter of October 18, 1900, have been received. A very large majority of the replies favor a reduction of the number of lectures by dropping either or both the Lenten and Technical courses.

With this positive expression of preference on the part of the resident members, and in view of the probable increase in cost of the Technical course, due to the fact that a more expensive hall than that of Columbian University would have to be secured, the Board has decided to discontinue the Technical course during November and December and to omit the Lenten course of the present season. The Popular course at the Congregational Church will be given as heretofore on alternate Fridays, beginning Friday, November 9, 1900.

Membership tickets admitting two persons to the lectures and a preliminary notice of the lectures during November and December will be mailed in a few days.

POPULAR LECTURES DURING NOVEMBER

The course of Popular lectures will be opened Friday, November 9, 1900, by Mr M. H. Saville, of the American Museum of Natural History, New York, the subject being "The Ancient City of Mitla, Mexico." The lecture will be illustrated by lantern slides.

The second lecture will be given by General A. W. Greely, Chief Signal Officer, U. S. A., on Friday evening, November 23, 1900. General Greely's subject will be "A Trip through Alaska."

The lectures will be given in the Congregational Church, corner of Tenth and G streets northwest, at 8 o'clock p. m. sharp.

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